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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/055,565	10/26/2001	Craig B. Zilles	MIT-051CN2	8320

51414 7590 11/29/2005		EXAMINER
GOODWIN PROCTER LLP		PILLAI, NAMITHA
PATENT ADMINISTRATOR		

ART UNIT	PAPER NUMBER
2173	

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EXCHANGE PLACE
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DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/055,565	ZILLES ET AL.
	Examiner	Art Unit
	Namitha Pillai	2173

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>02 September 2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>39-58 and 60-83</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) <u>82 and 83</u> is/are allowed.

6)☒ Claim(s) <u>39-58 and 60-81</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>9/2/05</u>.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

DETAILED ACTION

Response to Amendment

1.   This Office action is responsive to the Request for Continued Examination (RCE)

filed under 37 CFR §1.53(d) on 9/2/05. Applicants have properly set forth the RCE,

which has been entered into the application, and an examination on the merits follows

herewith. The Examiner acknowledges Applicant's amendments to claims 39, 42, 43,

46-49, 51, 52, 60, 82 and 83 to better specify the invention. Claims 39-58 and 60-81

are rejected as being previously disclosed in prior art. Claims 82 and 83 are allowed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form

the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2.   Claims 39-58 and 60-81 are rejected under 35 U.S.C. 102(e) as being clearly

anticipated by U. S. Patent No. 5,629,594 (Jacobus et al.).

     Referring to claims 39 and 60, Jacobus discloses a method for determining

forces to be applied to a user through a haptic interface (column 1, lines 19-22).

Jacobus discloses generating a representation of a virtual object (column 7, lines 24-

30). Jacobus discloses determining a haptic interface location in response to a location

of a user (column 1, lines 49-58), wherein the point at which the user is positioned or

situated is the location of the user. Jacobus also discloses determining a fiducial object

location on the surface of the virtual object and calculating a force to be applied to the

user in response to the haptic interface location and the fiducial object location (column

2, lines 55-65).

Referring to claims 40 and 63, Jacobus discloses that the haptic interface is

represented by a single point and the fiducial object is represented by a single point

(column 4, lines 30-35), wherein there is a user location representing the haptic

interface and any other models in the three dimensional environment could represent

the fiducial object.

Referring to claims 41 and 64, Jacobus discloses that the fiducial object is

represented as a three dimensional object (column 3, lines 13-16).

Referring to claims 42 and 65, Jacobus discloses that three-dimensional object is

approximated by a series of points (Figure 6).

Referring to claims 43 and 66, Jacobus discloses that the fiducial object is

represented as a three dimensional object, with the three dimensional object is

approximated by a series of points, and the haptic interface location is a single point

(column 4, lines 30-37).

Referring to claims 44, 61 and 67, Jacobus discloses generating a representation

of a virtual object within a computer and computing the fiducial object location, such that

the distance between the fiducial object location and the haptic interface location is

minimized while maintaining that the fiducial object not pass through the virtual object

(column 4, lines 25-45 and column 10, lines 25-45).

Referring to claims 45 and 68, Jacobus discloses that the geometric representation of the virtual object is generated from a standard computer graphic file format (column 2, lines 10-15), wherein the virtual object can represent graphically any format of an item in real world.

Referring to claims 46 and 69, Jacobus discloses calculating a reaction force to send to the user, wherein the reaction force depends on a distance between the haptic interface location and the fiducial object location (column 10, lines 28-42).

Referring to claims 47 and 70, Jacobus discloses that reaction force is proportional to the distance (column 10, lines 35-45).

Referring to claims 48 and 71, Jacobus discloses calculating the reaction force involves calculating a component of the reaction force which depends on a difference in velocity between the haptic interface location and the fiducial object location (column 10, lines 50-54).

Referring to claims 49 and 72, Jacobus discloses that reaction force which depends on the difference in velocity between the haptic interface location and the fiducial object location is proportional to the difference in velocity (column 10, lines 50-54).

Referring to claims 50 and 73, Jacobus discloses displaying on a display in a location relative to the virtual object location (Figure 6).

Referring to claims 51 and 74, Jacobus discloses that the fiducial object location is different from the haptic interface location (Figure 6).

Referring to claims 52 and 75, Jacobus discloses that the fiducial object is

substantially co-located with the haptic interface location (Figure 6).

Referring to claims 53 and 76, Jacobus discloses performing iteratively until a

valid fiducial object location is found (column 4, lines 31-34).

Referring to claims 54 and 77, Jacobus discloses multiple surfaces of at

least one virtual object are considered in calculating a valid fiducial object location

(column 4, lines 30-34).

Referring to claims 55 and 78, Jacobus discloses that the virtual object deforms

in response to force applied to the virtual object by the user (column 9, lines 36-43).

Referring to claims 56-58 and 79-81, Jacobus discloses that the applied force

comprises a damping force, a stiffness force, and a friction force (column 10, lines 25-

65).

Referring to claim 62, Jacobus discloses displaying a representation of the

fiducial object on a display in a location relative to the virtual object location (Figure 6).

Response to Arguments

3.   Applicant's arguments filed 9/2/05 have been fully considered but they are not

persuasive.

Orientation is defined and interpreted as location or position relative to another

item, wherein the term fiducial object location refers to a location based on being

relative to another object. Therefore, Jacobus reference to the orientation is interpreted

as the fiducial object location used for calculating the force. Regardless of Jacobus

teaching an orientation of (P, R, Y) at a distinct location, the data set (P, R, Y) are

representative of information that along with user location can be used for calculating

the force. Jacobus further teaches that the user position and orientation is determined

from the three-dimensional space, with this three-dimensional space representing the

virtual object and the surface of the virtual object.

Jacobus (column 2, lines 57-60) refers to generating the force field based on a

function of the user position and orientation in the three dimensional space. The user

position is the location of the user and the orientation is the location of the user relative

to an object wherein, these two locations are used for calculating the force field.

Applicant's present claims refer to the use of data including location data for calculating

forces, wherein the claims do not read on features related to vector field methods.

Allowable Subject Matter

4.   Claims 82 and 83 are allowed. The following is a statement of reasons for the

indication of allowable subject matter: Claims 82 and 83 in addition to teaching the use

of haptic interface location and fiducial object location, clearly teaches a relationship

between the a real space and the use of graphic space. Claims 82 and 83 in addition to

the above teaches calculating a damping force based on process including

computations involving interpolating data associated with the nodes of the planar

surfaces, where the representation of an object in graphic space is generated as a

mesh of planar surfaces, with each of the planar surfaces comprising the nodes. The

combination of the above data involving computations interpolating data, the

relationship between real space and graphic space has not been previously disclosed in

a prior arts, wherein such detailed features would not be obvious over any prior art

previously disclosed. Based on the above reasons, claims 82 and 83 contain allowable matter.

Conclusion

5.   Responses to this action should be submitted as per the options cited below: The United States Patent and Trademark Office requires most patent related correspondence to be: a) faxed to the Central Fax number (571-273-8300) b) hand carried or delivered to the Customer Service Window (located at the Randolph Building, 401 Dulany Street, Alexandria, VA 22314), c) mailed to the mailing address set forth in 37 CFR 1 . 1 (e.g., P.O. Box 1450, Alexandria, VA 22313-1450), or d) transmitted to the Office using the Office's Electronic Filing System.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Namitha Pillai whose telephone number is (571) 272-4054. The examiner can normally be reached on 8:30 AM - 5:30 PM.
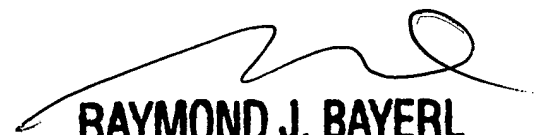
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cabeca can be reached on (571) 272-4048.

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the Group receptionist whose telephone number is

(571) 272-2100.

Namitha Pillai
Assistant Examiner
Art Unit 2173
November 23, 2005

RAYMOND J. BAYERL
PRIMARY EXAMINER
ART UNIT 2173